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the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate;

wherein the first and second diffraction gratings are formed on different materials such that a largest optical path difference to be applied to light rays passing through the diffraction grating portion with respect to each of plural wavelengths, becomes equal to a multiple, by an integral number, of the corresponding one of the plural wavelengths.

Cont'd
E1

2. A diffractive optical element having a diffraction grating portion which includes first and second diffraction gratings, the improvement residing in that:

the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate;

wherein the first and second diffraction gratings are formed on different materials such that a largest optical path difference to be applied to light rays passing through the diffraction grating portion with respect to each of plural wavelengths becomes

equal to a multiple, by an integral number, of the corresponding one of the plural wavelengths, and the alignment patterns are formed outside optically effective regions of the first and second diffraction gratings.

3. A diffractive optical element having a diffraction grating portion which includes first and second diffraction gratings, the improvement residing in that:

the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate;

wherein the first and second diffraction gratings are formed on different materials such that a diffraction efficiency of diffraction light of a particular order, with respect to each of plural wavelengths, becomes equal to or nearly equal to 100%.

4. A diffractive optical element having a diffraction grating portion which includes first and second diffraction gratings, the improvement residing in that:

the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are

positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate;

wherein the first and second diffraction gratings are formed on different materials such that a diffraction efficiency of diffraction light of a particular order, with respect to each of plural wavelengths, becomes equal to or nearly equal to 100%, and the alignment patterns are formed outside optically effective regions of the first and second diffraction gratings.

5. A diffractive optical element according to any one of Claims 1-4, wherein the first and second diffraction gratings are disposed opposed to each other.

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6. A diffractive optical element according to any one of Claims 1-4, wherein the alignment patterns have a sectional shape of one of a triangular shape, a trapezoidal shape and a semi-circular shape.

7. A diffractive optical element having a diffraction grating portion which includes first and second diffraction gratings, the improvement residing in that:

the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate,

wherein the alignment patterns have a sectional shape of one of a triangular shape, a trapezoidal shape and a semi-circular shape.

8. A diffractive optical element having a diffraction grating portion which includes first and second diffraction gratings, the improvement residing in that:

the first diffraction grating and an alignment pattern are integrally formed on a first substrate and the second diffraction grating and an alignment pattern are integrally formed on a second substrate, and that the first and second substrates are accumulated with a space therebetween and the first and second diffraction gratings are positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate,

wherein the alignment patterns have a sectional shape of one of a triangular shape, a trapezoidal shape and a semi-circular shape, and the alignment patterns are formed outside optically effective regions of the diffraction gratings.

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E1

9. (Amended) A method of manufacturing a diffractive optical element as recited in any one of Claims 1-4, 7, 8 and 15-20, characterized by a process for fitting the alignment patterns of the first and second substrates together.

10. (Amended) A method of manufacturing a diffractive optical element as recited in any one of Claims 1-4, 7, 8 and 15-20, characterized by a process in which, after the first substrate is formed, the second substrate is formed by use of a mold, wherein the alignment pattern of the first substrate is fitted into the alignment pattern of the second

substrate formed on the mold for the second substrate, whereby the first and second substrates are mutually positioned and molding of the second substrate is performed.

11. A method of manufacturing a diffractive optical element, comprising the steps of:

forming, upon a substrate, a first diffraction grating pattern and an alignment pattern;

preparing a mold having (i) an alignment pattern to be engaged with the alignment pattern formed on the substrate, and (ii) a second diffraction grating pattern; and

positioning the first diffraction grating pattern on the substrate and the second diffraction grating pattern to be spaced with respect to each other by engaging the alignment pattern of the substrate with the alignment pattern of the mold.

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12. An optical system having a diffractive optical element as manufactured in accordance with the method recited in Claim 11.

13. An optical system having a diffractive optical element according to any one of Claims 1-4, 7 and 8.

14. An optical system having a diffractive optical element as manufactured in accordance with the method recited in Claim 9.

Please add new Claims 15-20, as follows:

--15. A diffractive optical element, comprising:

a diffraction grating portion which includes first and second diffraction gratings, with said first diffraction grating and an alignment pattern being formed on a first substrate and said second diffraction grating and an alignment pattern being formed on a second substrate, the first and second substrates being accumulated with a space therebetween, and said first and second diffraction gratings being positioned so that the alignment pattern on the first substrate engages the alignment pattern on the second substrate,

wherein said first and second diffraction gratings are made of materials, respectively, which are different from each other, such that an optical path difference to be applied to light rays passing through the diffraction grating portion with respect to each of plural wavelengths, becomes equal to a multiple, by an integral number, of the corresponding one of the plural wavelengths.

16. A diffractive optical element, comprising:

a diffraction grating portion which includes first and second diffraction gratings, said first diffraction grating and an alignment pattern being formed on a first substrate and said second diffraction grating and an alignment pattern being formed on a second substrate, wherein the first and second substrates being accumulated with a space therebetween, and wherein said first and second diffraction gratings being positioned so

that the alignment pattern on the first substrate engages the alignment pattern on the second substrate,

wherein said first and second diffraction gratings are made of different materials, respectively, such that an optical path difference to be applied to light rays passing through the diffraction grating portion with respect to each of plural wavelengths, becomes equal to a multiple, by an integral number, of the corresponding one of the plural wavelengths, and wherein alignment patterns are formed outside optically effective regions of the first and second diffraction gratings.

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17. A diffractive optical element according to Claim 15, wherein the alignment patterns have a sectional shape of one of a triangular shape, a trapezoidal shape and a semi-circular shape.

18. A diffractive optical element according to Claim 16, wherein the alignment patterns have a sectional shape of one of a triangular shape, a trapezoidal shape and a semi-circular shape.

19. A diffractive optical element, comprising:

a diffraction grating portion which includes first and second diffraction gratings, with said first diffraction grating and alignment pattern being formed on a first substrate and said second diffraction grating and an alignment pattern being formed on a second substrate, the first and second substrates being accumulated with a space therebetween, and said first and second diffraction gratings being positioned so that the